

REMARKS

Claims 1-25, as amended, remain herein. Claims 2 and 11 have been amended. New claims 14-25 have been added. Support for the amendments and the new claims may be found throughout the specification (see, e.g., page 14, lines 17-25 of the specification and the original claims).

1. The specification has been amended thereby mooted the objections thereto.
2. Claim 11 has been amended thereby mooted the objections thereto.
3. Claims 1-13 were rejected under 35 U.S.C. § 112, first paragraph, for alleged lack of enablement.

The standard for determining whether a patent specification meets the enablement requirement is whether the experimentation needed to practice the invention is undue or unreasonable. *See Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916); *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988); MPEP 2164.01. The fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation. *See In re Wands*, 858 F.2d at 737; *In re Angstadt*, 537 F.2d 498, 504 (C.C.P.A. 1976); MPEP 2164.01.

Here, applicants claim specific valence electron level, conduction level, and/or energy gap relationships between the light-emitting-layer material, the first dopant, and the second

dopant. These relationships allow the first dopant and/or the second dopant to capture the holes injected into the light-emitting-layer material (see, e.g., page 11, line 20 to page 12, line 25 of the specification). This achieves an organic electroluminescence element having a high luminance, high efficiency, and a long durability.

The results described above can be achieved with different compounds having different chemical structures as long as the compounds satisfy the claimed valence electron level, conduction level, and/or energy gap relationships. A person of ordinary skill in the art can, without undue experimentation, measure the valence electron levels, conduction levels, and energy gaps of various dopants and light-emitting-layer materials, and select, based on these measurements, which compounds to use.

The Office Action alleges that there is uncertainty in the values making it nearly impossible for an individual of ordinary skill in the art to make the full scope of the invention. The Office Action cites alleged discrepancies between values in applicants' specification and Shi et al., Applied Physics Letters, 80, 3201-3203. Values for the valence electron level, conduction level, and/or energy gap may vary slightly depending on the measuring technique used. Shi measures valence electron level values using a different measuring technique, namely, ultraviolet photoelectron spectroscopy. In addition, Shi does not provide complete measuring conditions. Conversely, applicants' specification provides clear guidance for measuring the valence electron levels, conduction levels, and energy gaps (see, e.g., page 38, line 24 to page 39, line 6 of the specification).

“[T]o provide effective incentives, claims must adequately protect inventors. To

demand that the first to disclose shall limit his claims to what he has found will work . . . would not serve the constitutional purpose of promoting progress in the useful arts.” See MPEP 2164.08.

Thus, applicants have described the claimed subject matter to enable a person having ordinary skill in the art to make and use the claimed invention. The specification adequately enables the claims. Applicants respectfully request reconsideration and withdrawal of this rejection.

4. Claim 2 was rejected under 35 U.S.C. § 102(b) over Burroughes et al. PCT Publication WO 99/48160. Claim 2 has been amended to depend from claim 1, which is not subject to this rejection.

Applicants' claim 1 recites an organic electroluminescence element including a light-emitting-layer material, a first dopant and a second dopant that satisfy the following relation:

$$\underline{EG0 > EG1 \text{ and } EG0 > EG2}$$

wherein EG0, EG1 and EG2 are the energy gaps of the light-emitting-layer material, the first dopant and the second dopant, respectively. The TFB, PFM, and F8 materials disclosed in Burroughes do not satisfy applicants' claimed energy gap relationship. Indeed, according to FIGS. 4, 6 and 9 of Burroughes,  $EG0 \text{ (F8)} = 3.0$ ,  $EG1 \text{ (TFB)} = 3.0$ , and  $EG2 \text{ (PFM)} = 2.9$ . Thus,  $EG0 > EG1$  is not satisfied.

In addition, claim 14 is also patentable over Burroughes. Claim 14 recites an organic electroluminescence element wherein the molecular weight of at least one of the light-emitting-

layer material, the first dopant and the second dopant is from 100 to 1,500. Burroughs, however, discloses polymeric materials, and it is very probable that their molecular weights exceed 1,500. Thus, Burroughs does not disclose all elements of applicants' claims, and therefore is not an adequate basis for a rejection under 35 U.S.C. § 102(b). Applicants respectfully request reconsideration and withdrawal of this rejection.

5. Claims 1, 4-7, 10 and 11 were rejected under 35 U.S.C. § 102(b) over Hatwar et al. U.S. Patent 6,475,648 with evidence from Shi.

Applicants' claim 1 recites an organic electroluminescence element including a light-emitting-layer material, a first dopant and a second dopant that satisfy the following relation:

$$\underline{EG0 > EG1 \text{ and } EG0 > EG2}$$

wherein EG0, EG1 and EG2 are the energy gaps of the light-emitting-layer material, the first dopant and the second dopant, respectively.

As discussed above, the measuring conditions of the present application are different from those described in Shi. The valence electron level, conduction level, and energy gaps values of ADN and NPB, as disclosed in applicants' specification (see Table 1 at page of the specification) are as follows:

ADN (Compound H3): EC0 = 2.7; EV0 = 5.7; EG0 = 3.0

NPB: EC2 = 2.3; EV2 = 5.4; EG2 = 3.1

Thus, the materials disclosed in Hatwar '648 do not satisfy applicants' claimed energy gap relationship. Thus, Hatwar '648 does not disclose all elements of applicants' claims, and

Serial No.: 10/535,311  
Attorney's Docket No.: 28955.1050

therefore is not an adequate basis for a rejection under 35 U.S.C. § 102(b). Applicants respectfully request reconsideration and withdrawal of this rejection.

6. Claims 1-7 and 9-11 were rejected under 35 U.S.C. § 102(e) over Hatwar et al. U.S. Patent 6,967,062, with evidence from Hatwar '648. The earliest prior art date of Hatwar '062 is the March 19, 2003 U.S. filing date of parent application 10/391,727. The priority date of the present application is the November 18, 2002 filing date of Japanese priority application JP 2002-333865. Applicants file herewith an English translation of JP 2002-333865 to perfect their claim of priority. Thus, the effective filing date of the present application pre-dates the prior art date of Hatwar '062, and Hatwar '062 is not de jure prior art to the present application. Applicants respectfully request reconsideration and withdrawal of this rejection.

7. Claims 1-11 were rejected under 35 U.S.C. § 102(e) over Jarikov et al. U.S. Patent 7,183,010. However, the Office Action does not present prima facie evidence that Jarikov is de jure § 102(e) prior art to the present application.

The present application is entitled to the November 18, 2002 filing date of Japanese priority application JP 2002-333865. This filing date pre-dates Jarikov's August 5, 2003 U.S. filing date. The Office Action does not present prima facie evidence that Jarikov is entitled to the April 22, 2002 filing date of Jarikov's parent application. Applicants respectfully request reconsideration and withdrawal of this rejection.

8. Claims 1, 4-7, 10 and 11 were rejected under 35 U.S.C. § 103(a) over Hatwar '648. As discussed above, the NPB compound disclosed in Hatwar '648 does not satisfy applicants' claimed energy gap relationship between the light-emitting-layer material and the second dopant. As demonstrated in the enclosed Declaration Under Rule 132 of Masakazu Funahashi, such energy gap relationship achieves a high luminance, a high efficiency, and a long durability (compare Experiments A and C or B and E of the enclosed Declaration).

Hatwar '648 also discloses rubrene and DCM as dopants (see Hatwar '648 at FIG. 3). When rubrene and DCM are selected as dopants, however, applicants' claimed conduction level relationship is not satisfied:

ADN (Compound H3):  $EC0 = 2.7$ ;  $EV0 = 5.7$ ;  $EG0 = 3.0$

Rubrene:  $EC1 = 3.15$ ;  $EV1 = 5.36$ ;  $EG1 = 2.21$

DCM:  $EC2 = 3.11$ ;  $EV2 = 5.26$ ;  $EG1 = 2.15$

As demonstrated in the enclosed Declaration Under Rule 132 of Masakazu Funahashi, the conduction level relationship also achieves a high luminance, a high efficiency, and a long durability (compare Experiments B and D of the enclosed Declaration).

Thus, Hatwar '648 does not disclose all elements of applicants' claimed invention. Furthermore, Hatwar '648 discloses nothing that would have suggested applicants' claimed invention to one of ordinary skill in the art. There is no disclosure or teaching in Hatwar '648, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to anticipate or suggest applicants' presently claimed invention.

Reconsideration and withdrawal of this rejection are respectfully requested.

9. Claims 1-13 were rejected under 35 U.S.C. § 103(a) over Kobori et al. U.S. Patent 6,285,039.

Kobori cites multiple materials and dopants for use in the light emitting layer but says nothing about applicants' claimed valence electron level, conduction level, and/or energy gap relationships between the light-emitting-layer material, the first dopant, and the second dopant. In addition, although Kobori discloses compounds with chemical structures that are similar to the compounds disclosed in applicants' specification at Table 1, having a similar chemical structure does not ensure that applicants' claimed valence electron level, conduction level, and/or energy gap relationships between the light-emitting-layer material, the first dopant, and the second dopant will be satisfied.

The enclosed Declaration Under Rule 132 of Masakazu Funahashi shows that the devices of Experiments D and E exhibit inferior luminance, efficiency, and durability, than the device of Experiment B even though Experiments B, D and E differ only in the second dopant. Similarly, when Experiments A and C are compared, the device of Experiment C exhibits inferior luminance, efficiency, and durability, than the device of Experiment A even though Experiments A and C differ only in the second dopant. Experiment D does not satisfy applicants' claimed conduction level relationship, while Experiments C and E do not satisfy applicants' claimed energy gap relationship. Thus, applicants' claimed valence electron level, conduction level, and/or energy gap relationships are not obvious.

Serial No.: 10/535,311  
Attorney's Docket No.: 28955.1050

Thus, Kobori does not disclose all elements of applicants' claimed invention. Furthermore, Kobori discloses nothing that would have suggested applicants' claimed invention to one of ordinary skill in the art. There is no disclosure or teaching in Kobori, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to anticipate or suggest applicants' presently claimed invention.

Reconsideration and withdrawal of this rejection are respectfully requested.

Accordingly, this application is now fully in condition for allowance and a notice to that effect is respectfully requested. The PTO is hereby authorized to charge/credit any fee deficiencies or overpayments to Deposit Account No. 19-4293 (Order No. 28955.1050). If further amendments would place this application in even better condition for issue, the Examiner is invited to call applicants' undersigned attorney at the number listed below.

Respectfully submitted,

STEPTOE & JOHNSON LLP

Date: April 15, 2008

Houda MORAD  
Roger W. Parkhurst  
Reg. No. 25,177  
Houda Morad  
Reg. No. 56,742

STEPTOE & JOHNSON LLP  
1330 Connecticut Avenue, NW  
Washington, DC 20036  
Tel: 202-429-3000  
Fax: 202-429-3902